



Course Syllabus

HBIO 205Lxg – The Science of Sport

4 Units

Spring 2025

Lecture: MWF 9:00-9:50 AM

Classroom Location: [THH 208](#)

Instructor: Helen Soultanakis, Ph.D.

Office: [AHF B37](#)

Office Hours: MW 11am-1pm or by appointment

Contact Info: soul@usc.edu

Laboratory Director: Anh-Khoi Nguyen, Ph.D.

Office: PED 109

Office Hours: by appointment

Contact Info: agnguyen@usc.edu

Lab Instructors: (*Attendance in Labs is mandatory*)

Lisa Le, M.A. Contact Info: lalisa@usc.edu

Gudrun Bara Floyd, M.A. Contact Info: gbfloyd@usc.edu

Lab Location: PED B16

Lab Instructors' Office: PED 109

Office Hours: TBA

Course Description

Welcome to HBIO 205, "The Science of Sport". This course is a learner-centered course in which you will be encouraged to participate in shaping your learning experience in a welcoming class environment. The material is presented in an engaging manner for all students, even those who have never had any science or biology courses before.

Drawing on examples from the 2024 Summer Olympics we will discuss the science that explains much of the success of these elite athletes. You will understand the biological determinants that can maximize performance with training and proper nutrition. These biological adaptations can be further extrapolated to your individual training goals to enhance your fitness and health.

In addition to the lecture, this course contains a laboratory portion that serves to reinforce many of the topics discussed in lecture. This includes the determination of energy balance, caloric expenditure, aerobic and

anaerobic capacity, as well as muscle strength and endurance in ways that are both informative and engaging.

Learning Objectives

- To understand the responses and adaptations of skeletal muscle and the cardiorespiratory system to sport
- To understand how the brain, nerves, muscles, heart and lungs all collaborate in human movement
- To explore the importance of nutrition in fueling optimal performance
- To evaluate caloric balance and energy expenditure of sports of varying intensities and duration
- To understand the biological factors that facilitate and limit optimal performance.
- To learn about the science that underlies modern training concepts such as: HIIT training, Lactate Threshold training, nutritional supplementation for improved performance, etc.
- To gain knowledge of how sport and exercise combined with healthy nutrition can combat chronic diseases and improve health.

Required Text

Physiology of Sport & Exercise, 8th or older Editions, by Kenney, Wilmore, Costill (2021). Human Kinetics; Hardcover ISBN-10: 1718201729/ ISBN13: 978-1718201729; E-Textbook ISBN: 9781718210387.

Our New Learning Platform: Brightspace

How to Log In

To access Brightspace today, follow these steps:

1. Go to <https://brightspace.usc.edu/d2l/login> to login. You can also find Brightspace on myUSC.
2. Enter your USC Net ID to access
3. Begin navigating through Brightspace.

I also encourage you to download the mobile app, Brightspace Pulse, available in both the [Apple App Store](#) and [Google Play](#).

What to Expect

Brightspace provides an enhanced learning experience with detailed class progress reports. With Brightspace, you can easily see all assignment due dates in one place.

Support Resources

Do you want to learn more about Brightspace? Check out training and resources in the [Brightspace Student Tutorials](#). Find technical support information below:

- **Student Guides:** [Brightspace Student Guides](#)
- **Brightspace Technical Support Line:** 888-895-2812
- **Brightspace Email Support:** usc@d2l.com

Description and Assessment of Assignments

Assessment and Assignments are meant to guide and embrace your learning process. In a learner-centered course assignment & assessments are not meant to be a source of stress for you but a way to demonstrate your understanding of the material taught. You are offered several grading opportunities so that you can shape your grade based on your strengths. You can also drop your lowest performance test/exam and enhance your grade with small in-class group project opportunities offered (with no extra homework).

Written Exams will be administered in person on specific days during the class period (see Course Schedule

below). Exams may be delivered electronically and, if so, will require installation of **Respondus Lockdown Browser** <https://download.respondus.com/lockdown/download.php?id=945755274>, on a PC or Mac computer (Chromebooks are not supported).

- Lecture material will be evaluated via two midterm exams plus a comprehensive final exam, and will comprise 50% of your total course grade. Note: Each exam is worth 25% of your grade with the lowest scoring exam dropped from your total score.

In-Class Group Project Assessment. There will be 4 in-class group project assignments that comprise 25% of the total course grade. These assignments have deliverable objectives that will require you to work during the hour of the classroom only (i.e. no extra homework). They are meant to encourage interaction, communication and exchange, and assessed as a group. To receive full credit for each in-class project you need to a) attend the class, b) answer all the questions and c) fulfill all the required work based on a rubric.

Laboratory Assessment and Assignments. The laboratory portion will be evaluated separately (see Lab Syllabus) via laboratory exercises and quizzes as well as a classroom final exam. The lab portion will represent 25% of your final course grade.

- Extra credit (up to +2.5 % of the final course grade) can be acquired by attending the JEP program and fulfilling the program requirements <https://dornsife.usc.edu/joint-educational-project/student-sign-up/>.

All the above will be explained in detail in classroom during the 1st day of classes. My advice is: bring your enthusiasm in class and your grading will reward you.

Technological Proficiency and Hardware/Software Required

For course communications we will be using a new learning platform, “Brightspace”. Those for us returning to USC should be aware of the transition from the old platform, Blackboard, to the Brightspace platform environment that occurred this past summer. There will undoubtedly be a “learning curve” as we adjust to this new platform with its different organization, e.g. location of lecture notes, homework assignments, grades, etc. Hopefully, we will all adapt easily and overcome any problems quickly. For those of you who are new to such learning platforms, there are numerous learning materials available to help you get up to speed with Brightspace at <https://itservices.usc.edu/find-services/students/> Also, please don't hesitate to contact me at me via email: soul@usc.edu, in case you run into any problems with our new learning environment.

Although there are no specific technology/software requirements *per se*, you will need an internet-enabled device with browser capabilities, such as a tablet, laptop, or desktop computer, to access Brightspace, which will be the gateway for any assignments as well as the repository for lecture slides, videos, and other course materials. Should we need to go online, lectures will be delivered via Zoom. Exams may be delivered electronically in-class and, if so, will require installation of **Respondus Lockdown Browser** that you can find in the following link: <https://download.respondus.com/lockdown/download.php?id=945755274> on a PC or Mac computer (Chromebooks are not supported). Support for these resources can be found at the **ITS Customer Support Center** <https://itservices.usc.edu/>.

Attendance

Class attendance for lectures is not monitored and does not count towards your course grade, but students are responsible for all material presented in lectures. Attendance is highly recommended as the in-class discussions will help you to better understand the presented concepts. Lecture slide sets will be shared with students via Brightspace before or after the lecture. Lectures will **not** be provided online or recorded, and student's missing lectures are encouraged to seek out classmates for any information not included in the slide-sets

Lab Attendance

IMPORTANT NOTICE: As laboratory experiential learning is crucial to meeting the learning objectives of this course you must have completed a significant number of the assigned weekly lab activities **before** the final lecture exam. The number of assigned weekly lab activities that must be completed before the final lecture exam will be explained to you in detail by your lab instructor during the first lab meeting of the semester.

Student athletes with approved "Travel Request Letters" and students who give advance notice of religious observation conflicts, as well as verified medical issues, will be allowed to make-up the lab assignments.

Course Specific Policies

- A midterm exam can be taken at another date ONLY if the student has a **documented** medical excuse, religious conflict, or athletic/competition excuse.
- A request to take a make-up exam must be accompanied by appropriate evidence of necessity (i.e. a medical excuse, letter from the athletic department for traveling/competing athlete, religious accommodation request form, etc.). Any religious or athletic conflicts should be made know to the instructor within the first 3 weeks of class.
- When allowed, a make-up exam will be different in content and may differ in format from the originally scheduled exam. Make-up exams may also be proctored by personnel who do not have knowledge in the area being tested.
- Exams and lab grades will be scored, but not assigned a letter grade. Only the final course grade will be assigned a letter grade.
- The final exam is cumulative and must be taken at the scheduled time and date as dictated by university policy.
- Extra credit will be offered for this course via JEP. Early in the semester, a JEP representative will visit ourclass to discuss the opportunities available. To register for JEP, visit <http://dornsife.usc.edu/joint-educational-project/>

Zoom Lectures: This course is specified as an in-person lecture course and as such will **not** normally be provided via Zoom (or recorded). However, extenuating circumstances (eg. Instructor illness) may periodically require such presentations for which students will be notified ahead of time. During any Zoom lecture you are encouraged to leave your camera/video on but are not required to do so. Audio should be muted unless asking a question.

Grading Timeline

In the class meeting immediately preceding each midterm and the final, there will be a review of the material designed to help students consolidate what they learned in the weeks leading up to the exam. These reviews are scheduled as follows,

Midterm I – Monday, **January 20, 2025**

Midterm II – Monday, **February 17, 2025**

Final Exam – Friday, **May 9th, 2025 (8-10 am)**

(Laboratory grading schedule is provided separately in the lab syllabus/handbook

Other Important dates:

In-Class Group Projects.

#1: Feb 12, #2 Mar 3, #3 Mar 26, #4 Apr 11

Infographic Presentations: Apr 23, Apr 25 & Apr 30.

Grading Breakdown

Assessment Tool (assignments)	Points	% of Grade
Midterm 1	100	25*
Midterm 2	100	25*
Final Exam	100	25*
In class project points (4X25 points)	100	25
Lab	100	25
TOTAL	400*	100
JEP (extra Credit)		0-3
<i>*The lowest grade of the midterms or final exam will be dropped</i>		

Grading Scale

- Your midterm and final exam scores will be posted on Brightspace shortly after each exam with a maximum of 100 points for each exam. You can apply the scale provided below to determine your approximate letter grade on each portion.
- The lab portion of the course employs a separate grading scheme that will be discussed in your first lab section meeting with your individual lab instructor. Lab participation and lab work is mandatory. However, the % of your final Lab grade will be incorporated in the calculation of your final grade for the course.
- For your Course Grade, percentages from your two best exam scores (out of 2 midterms and the Final, 50%), in addition to your in-class projects (25%) and your Lab grade (25%) will be calculated together to yield your final course grade.

Letter Grade	Points/Percentage
A	93.0 – 100
A-	90.0 – 92.9
B+	87.0 – 89.9
B	83.0 – 86.9
B-	80.0 – 82.9
C+	77.0 – 79.9
C	73.0 – 76.9
C-	70.0 – 72.9
D+	67.0 – 69.9
D	63.0 – 66.9
D-	60.0 – 62.9

Tentative Course Schedule

Date	Lecture Topic	Physiology of Sport & Exercise (8 th or older ed.)
Jan. 13	INTRODUCTION	
Jan. 15	2024 Olympics	
Jan. 17	The Science of Running	
Jan. 20	MARTIN LUTHER KING JR HOLIDAY	
Jan. 22	Tissues and Biological Organizations of the Body	
Jan. 24	Musculoskeletal System-Basic Muscle Groups	
Jan. 27	Muscle Structure and Function	Ch1 & 3
Jan. 29	Muscle Fiber Types	
Jan. 31	From Nerve to Impulse to Muscle Action	
Feb. 3	Body Composition and Healthy Weight	Ch.17
Feb. 5	Nutrition-Essential Nutrients-Macro & Micronutrients	
Feb. 7	A Healthy Balanced Meal & Tools for Healthy Eating	
Feb. 10	Nutrition and Fitness and Performance Enhancing Supplements	Ch. 17
Feb. 12	In Class Group Project (#1): Create your own balanced nutrient dense meals with software application	
Feb. 14	Review	
Feb. 17	MIDTERM 1	
Feb. 19	Energy expenditure-RER and VO ₂ max	Ch. 5
Feb. 21	VO ₂ max and training adaptations	
Feb. 24	Bioenergetics-Basic Energy Systems in Sports	
Feb. 26	Anaerobic & Aerobic Energy Systems	Ch. 6
Feb. 28	Research in Exercise Science	
Mar. 3	In Class Group Project (#2) Guided Sports Science article retrieval and note taking from a scientific article	
Mar. 5	Structure, Function and electrical conductance of the Heart	Ch. 7
Mar. 7	Heart Rate, Stroke Volume, Cardiac Output Cardiovascular Responses at rest and during Exercise	Ch 7
Mar. 10	Lung Structure and Respiratory Function	Ch 8
Mar. 12	Review	
Mar. 14	MIDTERM 2	
Mar. 17-21	SPRING BREAK	
Mar. 24	Cardiorespiratory Training Adaptations and Health	Ch 7 and 8
Mar. 26	In Class Group Project (#3) Preparing an Infographic Presentation slide based on your scientific article (from project #2)	
Mar. 28	Principles of Training	
Mar. 31	Adaptations and Benefits to Aerobic & Anaerobic Training	Ch. 10,11
Apr. 2	Adaptations and Benefits to Resistance Training	Ch. 11, 13
Apr. 4		

Apr. 7	Weight & Resistance Training Guidelines and latest research	PPT
Apr. 9	ACSM, USDA and AHA guidelines for Exercise	PPT
Apr. 11	In Class Group Project (#4)-Create (in pairs) your weekly workout schedule, with Resistance, Aerobic & Anaerobic training	
Apr. 14	Determinants of Fatigue, Optimizing Sports Performance & Overtraining	Ch. 6 & 16
Apr. 16	Exercise in Hot/Cold Environments and High Altitude	Ch. 14
Apr. 18	Aging in Sport and Exercise & US Physical Activity Guidelines	Ch.20
Apr. 21	Cardiovascular Disease and Physical Activity	Ch. 22
Apr. 23	Infographic Students' Presentations (1 st day)	
Apr. 25	Infographic Students' Presentations (2 nd day)	
Apr. 30	Infographic Students' Presentations (3 rd day)	
May 2	Final's Review	
May 9	FINAL EXAMINATION Friday May 9 (8-10 am)	

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extra-curricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university. For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Academic Dialogue

The foundations of academic learning are rooted in our capacity to listen to each other, learn from each other, and respect each other, particularly when we disagree with each other. Academic dialogue is not about winning, but about learning together. To facilitate our building of a robust academic community in this class, we will be creating a living document of norms and expectations of engagement for respectful dialogue.

HBIO Policy on Use of Generative AI – For the lecture portion AI is/will be permitted on specific assignments

In this course, you could use artificial intelligence (AI)-powered programs to help you only with assignments that indicate the permitted use of AI. You should also be aware that AI text generation tools may present incorrect information, biased responses, and incomplete analyses; thus, they are not yet prepared to produce text that meets the standards of this course. To adhere to our university values, you must cite any AI-generated material

(e.g., text, images, etc.) included or referenced in your work and provide the prompts used to generate the content. Using an AI tool to generate content without proper attribution will be treated as plagiarism and reported to the Office of Academic Integrity. Please review the instructions in each assignment for more details on how and when to use AI Generators for your submissions. This does NOT apply to you Lab assignments, where every instructor will inform you with their AI policy.

Course Content Distribution and Synchronous Session Recordings Policies

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment. Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13). Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Course Evaluations

Course evaluation occurs at the end of the semester. This evaluation process allows students to comment and rate their experience in the class. The process is conducted online, and you are encouraged to take advantage of this opportunity.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call (Non-emergency assistance)

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.